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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/711,674   | 09/30/2004  | Chiu-Shun Lin        | 13689-US-PA         | 5673             |
| 31561  | 7590        | 09/21/2005           | EXAMINER            |                  |
| JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE<br>7 FLOOR-1, NO. 100<br>ROOSEVELT ROAD, SECTION 2<br>TAIPEI, 100<br>TAIWAN |             |                      | MANDALA, VICTOR A   |                  |
|  |             | ART UNIT             | PAPER NUMBER        |                  |
|  |             | 2826                 |                     |                  |
| DATE MAILED: 09/21/2005  |             |                      |                     |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |  |                         |
|------------------------------|--|-------------------------|
| <b>Office Action Summary</b> | <b>Application No.</b>                   | <b>Applicant(s)</b>     |
|                              | 10/711,674                               | LIN ET AL.              |
|                              | <b>Examiner</b><br>Victor A. Mandala Jr. | <b>Art Unit</b><br>2826 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 06 July 2005.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-28 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

|  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-22 & 26-28 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S.

Patent No. 6,897,570 Nakajima et al.

1. Referring to claim 1, a bonding pad, (Figure 5& 6 #36), for disposing on a chip, (Figure 5& 6 #100), comprising: a body, (Figure 5& 6 #36), having a first surface, (Figure 5& 6 upper surface of #36), and a corresponding second surface, (Figure 5& 6 bottom surface of #36), and having a central region and corner regions, (Figure 5& 6 central and outer area of #36), wherein the body, (Figure 5& 6 #36), is disposed on the chip, (Figure 5& 6 #100), and the second surface, (Figure 5& 6 bottom surface of #36), of the body, (Figure 5& 6 #36), is in contact with the chip, (Figure 5& 6 #36); and at least one first protruding, (Figure 5& 6 #36C), portion disposed on the first surface, (Figure 5& 6 upper surface of #36), at the corner regions of the body, (Figure 5& 6 #36).

2. Referring to claim 2, a bonding pad, further comprising a second protruding portion, (Figure 5& 6 #36C), disposed on the first surface, (Figure 5& 6 upper surface of #36), in the central region of the body, (Figure 5& 6 #36).

Art Unit: 2826

3. Referring to claim 3, a bonding pad, wherein the second protruding portion, (Figure 5& 6 #36C), is connected, (Figure 5&6 via #36), to the first protruding portion, (Figure 5& 6 #36C).

4. Referring to claim 4, a bonding pad, wherein the shape of the second protruding portion, (Figure 5& 6 #36C), when viewed from the top against the first surface is selected from the group consisting of a cross-line shape, a circular shape, a circular ring shape, an ellipse shape, an ellipse ring shape, a polygonal shape, a polygonal ring shape, a linear shape, a geometrical shape and combinations thereof.

5. Referring to claim 5, a bonding pad, wherein the shape of the second protruding portion, (Figure 5& 6 #36C), when viewed from the top against the first surface is selected from the group consisting of a cross-line shape, a circular shape, a circular ring shape, an ellipse shape, an ellipse ring shape, a polygonal shape, a polygonal ring shape, a linear shape, a geometrical shape and combinations thereof.

6. Referring to claim 6, a bonding pad, wherein the materials for the body, (Figure 5& 6 #36), the first protruding portion, (Figure 5& 6 #36C), and the second protruding portion, (Figure 5& 6 #36C), are identical, (Col. 7 Lines 45-46).

7. Referring to claim 7, a bonding pad, wherein the materials for the body, (Figure 5& 6 #36), and the first protruding portion, (Figure 5& 6 #36C), are identical, (Col. 11 Lines 43-50).

8. Referring to claim 8, a bonding pad, wherein the material constituting the bonding pad, (Figure 5A&B #144), comprises aluminum, (Col. 7 Lines 45-46).

9. Referring to claim 9, a bonding pad, (Figure 5& 6 #36), wherein the body has a four-sided geometric shape.

Art Unit: 2826

10. Referring to claim 10, a chip structure, comprising: a chip having an active surface; at least one bonding pad, (Figure 5& 6 #36), disposed on the active surface of the chip, (Figure 5& 6 #100), the bonding pad including: a body, (Figure 5& 6 #36), having a first surface, (Figure 5&6 upper surface of #36), and a corresponding second surface, (Figure 5&6 bottom surface of #36), and having a central region and corner regions, wherein the body, (Figure 5& 6 #36), is disposed on the chip and the second surface, (Figure 5&6 bottom surface of #36), of the body, (Figure 5& 6 #36), is in contact with the chip, (Figure 5& 6 #100); and at least one first protruding portion, (Figure 5&6 #36C), disposed on the first surface, (Figure 5&6 upper surface of #36), at the corner regions of the body, (Figure 5& 6 #36).

11. Referring to claim 11, a chip structure, wherein the bonding pad, (Figure 5& 6 #36), further comprises a second protruding portion, (Figure 5& 6 #36C), disposed on the first surface, (Figure 5&6 upper surface of #36), in the central region of the body, (Figure 5& 6 #36).

12. Referring to claim 12, a chip structure, wherein the second protruding portion, (Figure 5& 6 #36C), is connected, (Figure 5&6 via #36), to the first protruding portion, (Figure 5& 6 #36C).

13. Referring to claim 13, a chip structure, wherein the shape of the second protruding portion, (Figure 5& 6 #36C), when viewed from the top against the first surface is selected from the group consisting of a cross-line shape, a circular shape, a circular ring shape, an ellipse shape, an ellipse ring shape, a polygonal shape, a polygonal ring shape, a linear shape, a geometrical shape and combinations thereof.

14. Referring to claim 14, a chip structure, wherein the shape of the second protruding portion, (Figure 5& 6 #36C), when viewed from the top against the first surface is selected from

the group consisting of a cross-line shape, a circular shape, a circular ring shape, an ellipse shape, an ellipse ring shape, a polygonal shape, a polygonal ring shape, a linear shape, a geometrical shape and combinations thereof.

15. Referring to claim 15, a bonding pad, wherein the materials for the body, (Figure 5& 6 #36), the first protruding portion, (Figure 5& 6 #36C), and the second protruding portion, (Figure 5& 6 #36C), are identical, (Col. 7 Lines 45-46).
16. Referring to claim 16, a bonding pad, wherein the materials for the body, (Figure 5& 6 #36), and the first protruding portion, (Figure 5& 6 #36C), are identical, (Col. 7 Lines 45-46).
17. Referring to claim 17, a chip structure, wherein the material constituting the bonding pad, (Figure 5& 6 #36), comprises aluminum, (Col. 7 Lines 45-46).
18. Referring to claim 18, a chip structure, wherein the body, (Figure 5& 6 #36), has a four-sided geometric shape.
19. Referring to claim 19, a chip structure, further comprising a passivation layer, (Figure 5& 6 #41&42), disposed on the active surface of the chip, (Figure 5& 6 #100), that also covers the peripheral region of the bonding pad, (Figure 5& 6 #36), but leaves the central region of the bonding pad, (Figure 5& 6 #36), exposed.
20. Referring to claim 20, a chip structure, further comprising at least a bump, (Figure 5& 6 #52 & Col. 7 Lines 57-58), disposed on and electrically connected with the bonding pad, (Figure 5& 6 #36).
21. Referring to claim 21, a pad for disposing on a chip, comprising: a body, (Figure 5& 6 #36); and at least one first protruding portion, (Figure 5& 6 #36C), disposed on corner regions of the body, (Figure 5& 6 #36C).

Art Unit: 2826

22. Referring to claim 22, a pad, further comprising a second protruding portion, (Figure 5& 6 #36C), disposed on central region of the body, (Figure 5& 6 #36).
23. Referring to claim 26, a device, (Col. 5 Line 8), comprising the pad, (Figure 5& 6 #36), of claim 21.
24. Referring to claim 27, a device, wherein the pad, (Figure 5& 6 #36), further comprises a second protruding portion, (Figure 5& 6 #36C), disposed on central region of the body, (Figure 5& 6 #36).
25. Referring to claim 28, a device, wherein the second protruding portion, (Figure 5& 6 #36C), is connected, (Figure 5& 6 via #36), to the first protruding portion, (Figure 5& 6 #36C).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 23, 24, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,897,570 Nakajima et al. in view of U.S. Patent Application Publication No. 2004/0166661 Lei.

26. Referring to claim 23, a display apparatus, (Lei Paragraph 0004 Line 1), comprising a device, which includes the pad, (Nakajima et al. Figure 5&6 #36 and Lei Figure 5A&B #144), of claim 21.

Art Unit: 2826

Nakajima et al. teaches all of the claimed matter in claims 23-25, but is silent on the specific semiconductor device consisting of a display apparatus, but Lei does teach a semiconductor device used as a display apparatus with bonding pads. It would be obvious to one having skill in the art to combine the teachings of Nakajima et al. with the teachings of Lei because it is well known that a display apparatus can be a semiconductor device.

27. Referring to claim 24, a display apparatus, wherein the pad, (Nakajima et al. Figure 5&6 #36 and Lei Figure 1F #12), further comprises a second protruding portion, (Nakajima et al. Figure 5&6 #36 and Lei Figure 1F #12).

28. Referring to claim 25, a display apparatus, wherein the second protruding portion, (Nakajima et al. Figure 5&6 #36C), is connected to the first protruding portion, (Nakajima et al. Figure 5&6 #36C).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor A. Mandala Jr. whose telephone number is (571) 272-1918. The examiner can normally be reached on Monday through Thursday from 8am till 6pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J. Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2826

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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